

[illegible]

1. An apparatus for placing a proximal portion of a penetrating member in a target area comprising:
  - a first arm being configured and arranged to support the penetrating member; and
  - a first drive mechanism being coupled to the first arm and being configured and arranged to translate the first arm from an initial position to any of a number of other positions spaced from the initial position, wherein one of the any of a number of other positions corresponds to a condition where the penetrating member proximal portion is disposed in the target area.
2. The apparatus of claim 1, wherein the first arm is further configured and arranged to rotatably support the penetrating member; and wherein the apparatus further comprises:
  - a second drive mechanism being coupled to the penetrating member and being configured and arranged so as to cause the penetrating member to rotate about a long axis thereof.
3. The apparatus of claim 2 wherein the first and second drive mechanisms are configured and arranged so that translating of the first member and rotating of the penetrating member are separately and independently controlled.

4. The apparatus of claim 2, wherein the first and second drive mechanisms are configured and arranged so that translating of the first member and rotating of the penetrating member are performed at the same time.

5. The apparatus of claim 2, wherein the first and second drive mechanisms are configured and arranged so as to do one of translating of the first member or rotating of the penetrating member.

6. The apparatus of claim 2, wherein the second drive mechanisms is configured and arranged so as to selectively rotate the penetrating member at one of a number of different rotational speeds.

7. The apparatus of claim 1 further comprising a second arm coupled to the first drive mechanism so that the first arm translates towards the second arm.

8. The apparatus of claim 7, in which the second arm further includes a guide mechanism in which the penetrating member is moveably received.

9. The apparatus of claim 8, wherein the guide mechanism is selectively configurable so as to be capable of guiding differently sized penetrating members.

100230-1324650

10. The apparatus of claim 1, wherein the first arm includes a detachable portion and a latching mechanism configured so as to releasably secure the detachable portion to a rest of the first arm.
11. The apparatus of claim 7, wherein the second arm includes a detachable portion and a latching mechanism configured so as to releasably secure the detachable portion to a rest of the second arm.
12. The apparatus of claim 11 wherein the detachable portion includes at least a portion of a guide mechanism in which the penetrating member is moveably received.
13. The apparatus of claim 1, wherein the first drive mechanisms includes a slipless transmission assembly.
14. The apparatus of claim 1, wherein the first drive mechanism comprises a screw mechanically coupled to the first arm such that rotation of the screw causes the first arm to translate from the first position.
15. The apparatus of claim 14, wherein the first drive mechanism further includes a bi-directional motor coupled to the screw and wherein the first arm can be translated in one of two direction responsive to the direction of rotation of the motor.

16. The apparatus of claim 1, wherein the first drive mechanism

17. The apparatus of claim 16, wherein the linear guide comprises:

a rod member;

**a track;**

a sliding member a portion of which is configured to slidably engaged

a coupling mechanism secured to the sliding member and slidably

18. The apparatus of claim 2, further comprising:

a controller that is configured and arranged to selectively and

19. The apparatus of claim 18, wherein the controller is further

20. The apparatus of claim 18, wherein the controller is configured

21. The apparatus of claim 18, wherein the controller is configured and arranged so as to do one of translating of the first member or rotating of the penetrating member.

22. The apparatus of claim 18, wherein the controller is configured and arranged so as to selectively rotate the penetrating member at one of a number of different rotational speeds.

23. The apparatus of claim 18, wherein the controller is configured and arranged so as to successively translate the penetrating member in a back and forth manner.

24. The apparatus of claim 18 further comprising a sensor and wherein the controller is configured and arranged to alter the penetrating member driving protocol based on signals from the sensor.

25. The apparatus of claim 1, wherein the penetrating member is configured so as to be capable of performing any one of injecting therapeutic agents into the target area, locating an imaging device in the target area, biopsy including tissue biopsy, and locating a medical device in the target area to be used to perform an medical procedure.

26. The apparatus of claim 2, wherein the second drive mechanism comprises a gear member secured to the penetrating member and being

FOUO 1524660

mechanically coupled to a motor such that operation of the motor causes the penetrating member to rotate about the long axis.

27. The apparatus of claim 26, wherein the second drive mechanism further includes a drive gear that is mechanically coupled to the motor and the penetrating member gear member so that the penetrating member gear member rotates responsive to rotation of the drive gear.

28. The apparatus of claim 27, wherein the motor is a bi-directional motor and wherein the penetrating member can be rotated in one of a clockwise and counter clockwise direction responsive to the direction of rotation of the motor.

29. An apparatus for placing a proximal portion of a penetrating member in a target area comprising:

a first arm being configured and arranged to rotably support the penetrating member;

a first drive mechanism being coupled to the first arm and being configured and arranged to translate the first arm from an initial position to any of a number of other positions spaced from the initial position, wherein one of the any of a number of other positions corresponds to a condition where the penetrating member proximal portion is disposed in the target area;

a second arm coupled to the first drive mechanism so that the first arm translates towards the second arm; and

0004351 08004  
T00E30 T5Z4660

a second drive mechanism being coupled to the penetrating member and being configured and arranged so as to cause the penetrating member to rotate about a long axis thereof.

30. The apparatus of claim 29 wherein the first and second drive mechanisms are configured and arranged so that translating of the first member and rotating of the penetrating member are separately and independently controlled.

31. The apparatus of claim 29, wherein the first and second drive mechanisms are configured and arranged so that translating of the first member and rotating of the penetrating member are performed at the same time.

32. The apparatus of claim 29, wherein the first and second drive mechanisms are configured and arranged so as to do one of translating of the first member or rotating of the penetrating member.

33. The apparatus of claim 29, wherein the second drive mechanisms is configured and arranged so as to selectively rotate the penetrating member at one of a number of different rotational speeds.

34. The apparatus of claim 29, in which the second arm further includes a guide mechanism in which the penetrating member is moveably received.

100E30: 152E4060

35. The apparatus of claim 29, wherein:

the first arm includes a detachable portion and a latching mechanism configured so as to releasably secure the detachable portion to a rest of the first arm; and

the second arm includes a detachable portion and a latching mechanism configured so as to releasably secure the detachable portion to a rest of the second arm.

36. The apparatus of claim 29, wherein the first drive mechanism comprises:

a screw mechanically coupled to the first arm such that rotation of the screw causes the first arm to translate from the first position;

a bi-directional motor coupled to the screw; and

wherein the first arm is translated in one of two direction responsive to the direction of rotation of the motor.

37. The apparatus of claim 36, wherein the first drive mechanism includes a linear guide that is configured and arranged so as to restrain motion of the first arm other than in the direction the first arm translates.

38. The apparatus of claim 37, wherein the linear guide comprises:

a rod member;

a track;

100230-1344000



a sliding member a portion of which is configured to slidably engaged the track and which is secured to the first arm; and

a coupling mechanism secured to the sliding member and slidably coupling the rod member to the sliding member.

39. The apparatus of claim 29, further comprising a controller that is configured and arranged to selectively and separately control the first and second drive mechanisms.

40. The apparatus of claim 29, wherein the second drive mechanism comprises:

a gear member secured to the penetrating member; and

a drive gear that is mechanically coupled to the motor and the penetrating member gear member so that the penetrating member gear member rotates responsive to rotation of the motor.

41. The apparatus of claim 40, wherein the motor is a bi-directional motor and wherein the penetrating member can be rotated in one of a clockwise and counter clockwise direction responsive to the direction of rotation of the motor.

42. An apparatus for driving a subcutaneous needle so a proximal portion thereof is located in a target area of a body comprising:

a first arm being configured and arranged to rotably support the needle;

FOUO: F52E1000

a screw mechanically coupled to the first arm such that rotation of the screw causes the first arm to translate from the first position;

a bi-directional motor coupled to the screw;

wherein the first arm is translated in one of two direction responsive to the direction of rotation of the motor; and

a linear guide that is configured and arranged so as to restrain motion of the first arm other than in the direction the first arm translates, wherein the linear guide includes:

a rod member,

a track,

a sliding member a portion of which is configured to slidably engaged the track and which is secured to the first arm, and

a coupling mechanism secured to the sliding member and slidably coupling the rod member to the sliding member.

45. The apparatus of claim 42, wherein the second drive mechanism comprises:

a gear member secured to the penetrating member;

a drive gear that is mechanically coupled to the motor and the penetrating member gear member so that the penetrating member gear member rotates responsive to rotation of the motor;

wherein the motor is a bi-directional motor; and

wherein the penetrating member can be rotated in one of a clockwise and counter clockwise direction responsive to the direction of rotation of the motor.

100430-1524600

46. A method for localizing a proximal portion of a penetrating member in a target area of a body comprising the steps of:

supporting the penetrating member from a first arm; and

translating the first arm from an initial position to any of a number of other positions spaced from the initial, wherein one of the any of a number of other positions corresponds to a condition where the penetrating member proximal portion is disposed in the target area; and

47. The method of claim 46 further comprising rotating the penetrating member about a long axis thereof.

2004-09-14 10:00:00